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## Updates from the ESWN Leadership Board by Tracey Holloway and the ESWN Leadership Board

Dear ESWN,

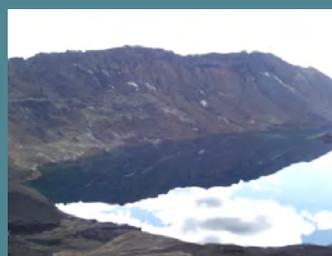
Hard to believe that 2015 has come to an end – a lot has happened, just since our summer 2015 newsletter! To start with the data: our community continues to grow - we have close to 3000 members in the Earth Science Women's Network on <http://ESWNonline.org>, over 1700 members in the ESWN Facebook Group, and over 4300 subscribers to our Earth Science Jobs Network (ES\_Jobs\_Net, hosted by the National Center for Atmospheric Research, NCAR, at [http://mailman.ucar.edu/mailman/listinfo/es\\_jobs\\_net](http://mailman.ucar.edu/mailman/listinfo/es_jobs_net)). Each of these groups has grown by about 200 people since our summer newsletter. Please continue to spread the word – invite junior colleagues, students, and friends to sign up at [eswnonline.org](http://eswnonline.org).

ESWN is a peer-mentoring organization – women helping women, scientists helping scientists. Members share advice, resources, and thoughtful discussions in person and online. The discussion forums hosted on our website are active - in the last month there have been over 80 different topics discussed on our site... many leading to lively conversations. Some of the most active topics discussed this past month were the Presidential Management Fellows program, the “imposter syndrome,” Python programming language, student office hours, #DistractinglySexy, mentoring programs, and our recent tour of the California Academy of Sciences. Something for everyone!

We've also tried something new this year – a photo competition! Members were invited to submit photos related to their research, and the ESWN community voted for their favorites from among the many awesome submissions. The outcome was amazing: six stunning images, with personal narratives to match. The winning images were photos of an eddy-covariance tower in a California rice field by Patricia Oikawa (University of California, Berkeley); a sunset over the Sargasso Sea during a research cruise by Stephanie Shaw (Electric Power Research Institute - EPRI); the Short Cloud Forest in Puerto



Photo: Kristen DeAngelis



Alison Graettinger



Sharon Delcambre



Stephanie Shaw

*Updates from the ESWN Board (continued)*

Rico by Kristen DeAngelis (University of Massachusetts Amherst); sea urchins in Oregon by Sharon Delcambre (Portland Community College); batik fabrics made by women from a career training center in Ghana, by Christine Wiedinmyer (NCAR); a volcano in Iceland by Alison Graettinger (SUNY Buffalo). The winning images have been made into notecards as thank-you gifts for ESWN donors (this could be you!). We brought them to the fall meeting of the American Geophysical Union (AGU) and offered them as a thank you gift to anyone who made a donation at [eswnonline.org/give](http://eswnonline.org/give). The winning pics are also posted throughout this newsletter.

Speaking of AGU, we had an extraordinary line-up of events this year. From workshops to receptions, tours to lunches, our goal is to offer ESWN members the opportunity to meet up in the hustle and bustle of the larger AGU meeting, while serving the wider AGU community. Details of the events are given later in this newsletter, and you may also find the full line-up online: <http://eswnonline.org/eswn-events-at-agu-fall-meeting-2015/>.

Of special note is... the return of the ESWN Reception!! Lack of funding over the past two years meant that we had to forego this AGU ESWN tradition. But now that we are a non-profit, we've been able to bring it back... and even better than before!! We hosted the big event on Monday 12/14/15 at The Children's Creativity Museum Imagination Lab – this is the museum between Moscone West and Moscone South – super-convenient and super-cool! The event was a great opportunity to meet colleagues and make new friends during the first day of sessions! It was FREE; all were welcomed; and there were complimentary appetizers and a cash bar.

We also held a tour of the California Academy of Sciences on Sunday; co-hosted the AGU Networking Reception for Early-Career Women on Tuesday; and provided an amazing line-up of workshops co-sponsored with AGU and other groups on Wednesday: *Navigating the NSF System* and *Opportunities Beyond Academia*. ESWN also co-hosted a Career Opportunities Networking Lunch this day.

In response to the controversy about sexual harassment in the astronomy community – another active discussion topic from earlier this fall – AGU, ESWN, and AWG (the Association of Women Geoscientists) coordinated to present a late-breaking addition to the Wednesday workshop line-up: *Forward Focused Ethics – What is the Role of Scientific Societies in Responding to Harassment and Other Workplace Climate Issues?*

These activities at AGU would not be possible without generous support from our AGU sponsors: Elsevier, the National Center for Atmospheric Research (NCAR), Nature Geoscience, and the California Academy of Sciences. If you work with any of these groups, or see them at AGU, please say “thanks!” for supporting our ESWN community.

ESWN operates on the proverbial shoestring budget – our current operating budget is about \$20K/year, which covers the website, AGU events, and a student assistant. Most of the (many!) hours that support ESWN come from volunteers – our board, our committees, our speakers, the women who put together this awesome newsletter, etc. In addition to the AGU sponsors noted above, our website costs are currently supported by the National Science Foundation through Grant #1431795 to the Colorado State University, as part of the IUSE (Improving Undergraduate STEM Education) initiative to extend the ESWN model to first-year undergraduate women in science; and our student assistant is currently supported by the University of Wisconsin—Madison 4W Initiative through the Global Health Institute. And, of course, there are you!! Many essential expenses of ESWN – from the required insurance to paying for our URL – have been made possible by private support from our members. Like public radio or your favorite charity, donations from people who care help keep ESWN free for the next generation of women starting and building careers in the Earth sciences.

In fact, we have made major progress this year on ensuring the future of ESWN... we are starting an endowment! An endowment is a pot of money that generates interest... forever! So, for example, at 5% interest, a \$150,000 endowment would generate \$7,500 a year in perpetuity. Our goal with the endowment is to ensure that ESWN “keeps the lights on.” We need this stream of funds to ensure that we don't lose the website or experience other catastrophic disruptions to our community. And, with the core expenses paid for, we can focus our fundraising efforts in new directions... from scholarships to professional workshops, and much more. So how do we raise \$150,000?

Great news! If we can get to \$100,000... then the final \$50,000 will be matched! Although we haven't issued the formal press announcement, ESWN has just received a very generous \$50,000 endowment-matching grant from the Madison Community Foundation (MCF) in Madison, Wisconsin. For smaller non-profits like us, it is common for a “community foundation” like MCF to hold and manage the endowment. For ESWN, MCF is a perfect fit. Although we're an international organization, ESWN is incorporated in Wisconsin, and MCF is one of very few community

*Updates from the ESWN Board (continued)*

foundations that offers this generous type of endowment funding. We are very grateful to MCF, and excited about this new step. You can start us on the way to \$150K by visiting <http://tinyurl.com/ESWN2015> (minimum credit card donation is \$20...which becomes \$30 with the match!) We are looking to engage our members – our target for endowment contributions is 10% of members (you!), or about 250 donors. This goal is in line with our 2014 fundraising campaign, which had about 300 donors, mostly ESWN members.

We also hope to get the word out about ESWN's value to women and to science – we have a great story to share! So if you know philanthropists, reporters, foundations, or corporations who can help with money or publicity (or both!) please keep us in mind. If you have ideas, or would like to introduce us to someone you think may be interested, we welcome your help! Just contact any of us on the fundraising committee:

- me (Tracey: taholloway@wisc.edu);
- Meredith (Meredith\_Hastings@brown.edu);
- Erika (marinspiotta@wisc.edu); or
- Carmen (crodriguez@rsmas.miami.edu).

We hope you enjoy this latest newsletter, led by ESWN Board member Carmen Rodriguez, with articles and content from Sarah Anderson, Alison Graettinger, Maura Hahnenberger, Stephanie Jarvis, Karen Ryberg, Lori Sutter, and graphic design from Rachel Licker. Way to go, newsletter committee!!

Thanks as always for your engagement with ESWN! We hope to see you on the discussion boards or in person in the coming months...

All the best,  
Tracey Holloway and the ESWN Leadership Board



**ESWN Leadership Board from left: Erika Marin-Spiotta, Carmen Rodriguez, Emily Fischer, Meredith Hastings, Tracey Holloway, Manda Adams, Rebecca Barnes, and (not pictured) Christine Wiedinmyer**



**ESWN @AGU 2015**

ESWN hosted and co-sponsored many exciting events at the 2015 fall meeting of the American Geophysical Union (AGU), offering our members and colleagues the opportunity to see old friends and make new connections. ESWN works to amplify the benefits of AGU, especially for women and early-career scientists. We structure effective and meaningful opportunities for networking, engagement, and learning, and we have become a major partner with AGU in their early-career and diversity activities since 2010. We are looking forward to seeing you next time in San Francisco! Below are details of the exciting events ESWN coordinated for the fall meeting of the AGU conference in 2015.

**December 13-16, 2015, ESWN presents...**

**Tour of the California Academy of Sciences –  
Special Fundraising Event  
Sunday, December 13, 2:00 – 6:00 PM  
California Academy of Sciences**

Getting an early start to making connections at AGU, ESWN members were invited to tour the California Academy of Sciences (CAS) - a leading aquarium, planetarium, and natural history museum all in one! This exciting opportunity was personally led by Dr. Jon Foley, the Executive Director and William R. and Gretchen B. Kimball Chair of CAS, who is also a star scientist and longtime supporter of ESWN. This amazing event was for a small group (20 max) with a \$100 minimum donation to ESWN, which covered the cost of transportation and provided the much-needed revenue to support ESWN activities. All were welcomed to participate, whether ESWN members, guests, or others interested in science and diversity.

**Donations accepted at:** <http://eswnonline.org/give/>

**ESWN Networking Reception  
Monday, December 14, 6:00 – 8:00 PM  
The Children's Creativity Museum Imagination Lab  
in the Yerba Buena Gardens**

ESWN's signature annual event - a great opportunity to meet colleagues and make new friends during the first day of the sessions! FREE, all were welcomed, cash bar and appetizers were provided.



## ESWN @AGU 2015 (continued)

### AGU Networking Reception for Early-Career Female Scientists and Students Tuesday, December 15, 7:00 – 9:00 PM San Francisco Marriott Marquis – Golden Gate B

This networking event was made especially for early-career female scientists and students, though of course, not-so-early-career women are always welcomed! This event was FREE and light refreshments were served. This event was co-hosted by ESWN.

### Navigating the NSF System Wednesday, December 16, 9:00 AM – 12:00 PM San Francisco Marriott Marquis – Golden Gate A

In this workshop, program officers from the National Science Foundation (NSF) were available for Q&A sessions with participants. This workshop is particularly helpful to early-career and mid-career participants, especially graduate students, post-docs, researchers, and tenure-track faculty thinking about applying for NSF funding for the first time. FREE and open to all AGU Fall meeting attendees through a partnership of the Earth Science Women's Network and AGU Education.

### Career Opportunities Networking Lunch Wednesday, December 16, 12:30 – 1:30 PM San Francisco Marriott Marquis – Golden Gate C1-C3

This lunch event was a nice opportunity for participants to practice their networking skills and learn about careers in a wide range of employment sectors, from national labs and government agencies to industry, consulting, and non-governmental organizations. It was a chance for participants to find out about careers they hadn't thought of (or even heard of) before! The lunch was co-hosted by ESWN and ticketed by AGU (\$5).

### Opportunities Beyond Academia San Francisco Marriott Marquis – Golden Gate A Wednesday, December 16, 4:15 – 6:15 PM

This workshop discussed the practical skills for making the transition to successful post-graduate careers in policy, federal research labs, state agencies, NGOs, industry, and private enterprise. The workshop was geared towards graduate students and post-docs who are considering options outside of academia, as well as interested faculty. This workshop was FREE and open to all AGU Fall meeting attendees through a partnership of the Earth Science Women's Network and AGU Education.

### Thank you to the generous sponsors of ESWN's activities at AGU!



### Forward Focused Ethics – What is the Role of Scientific Societies in Responding to Harassment and Other Workplace Climate Issues?

Wednesday, 16 December, 12:30 p.m. – 1:30 p.m.  
Moscone South, Gateway Ballroom, Room 102

Recent high-profile events in the news have raised awareness of the problem of harassment (including sexual harassment) in science and academia. These events have highlighted the need for support mechanisms for the targets of inappropriate behavior, as well as the need for a suitable institutional response to deter continued misconduct. In light of these events, ESWN, the Association for Women Geoscientists (AWG), and AGU co-sponsored a town hall meeting on harassment at the 2015 Fall AGU Meeting.

This session provided information on the lessons learned from recent research on the prevalence of sexual harassment in the scientific community, and discussed examples of the institutional and individual responses. This was an interactive session; participants were encouraged to share input and suggest actions for AGU and other scientific societies to help address and correct these issues. This town hall session was jointly sponsored by AGU, AWG, and ESWN. **Speakers included** Dr. Erika Marín-Spiotta (Professor, University of Wisconsin-Madison; Leadership Board Member of ESWN), **Dr. Christine Williams** (Professor, University of Texas at Austin), **Dr. Meg Urry** (Professor, Yale University; President of the American Astronomical Society), and **Dr. Mary Anne Holmes** (Professor, University of Nebraska-Lincoln).



## Member Perspectives: Facing your Fear... of Missing Out



**Dr. Maura Hahnenberger**  
Assistant Professor Geosciences  
Salt Lake Community College

When discussing work-life balance, clichés abound.

*There are just not enough hours in the day.  
It is hard juggling family and work commitments.  
I am so busy!  
Can women really have it all?*

We all have competing demands on our time as well as individual desires and ambitions. These can be personal, professional, or many times both! At some point choices must and will be made, whether they are conscious decisions or not. But what do you choose, and when do you make each demand or desire a priority? This is where the concept *Fear of Missing Out* (FOMO) comes into play.

FOMO is defined as the fear or anxiety brought on by the concern that one is missing opportunities or events. While for some, this anxiety is a mild annoyance, for others it can be a debilitating fear. Two ESWN members have graciously agreed to share their experiences with FOMO and how they have tried to overcome or at least gain acceptance of it.

While we all yearn for that time when we will be “less busy,” it often never materializes. When you reflect on how you spend your time, it is only you who can determine if your time and effort matches your own priorities. Yes, there will always be some things, events, and opportunities that you will miss out on, but kind acceptance of your choices and your path is a better notion than anxious judgment. I am often inspired by the simple words immortalized by Ram Dass in the title of his classic book: “Remember, Be Here Now.”

Finally, we all must remember to utilize our networks to support us throughout our own personal journeys. Friends, family, mentors, therapists, and even fellow ESWN members can be vital resources to each of us. Anxiety is common and universal, but you need not face your *Fear of Missing Out* solo. While clichés are overused, they sometimes send needed messages, so I will end with one such: “You are not alone.”

**Dr. Christy Wall**  
Education Director  
New Mexico  
Wildlife Center



I just learned the term ‘Fear of Missing Out,’ or FOMO, a few weeks ago, and hearing that phrase was like a light bulb. I’ve been struggling with this since I finished graduate school. There are so many more demands on my time now, and I don’t get to spend as much time outdoors skiing, hiking, and climbing. I worry about missing out on those personal activities. I also switched my career focus from research to teaching. Now I see emails and posts on social media from my friends who are off working on brilliant, exciting field campaigns, and I hate missing out on that. Hearing about FOMO made it all click for me, though. It’s made me begin a conscious effort to change my attitude. Rather than thinking ‘Man, I wish I was out in the field right now,’ I try to think about some aspect of my life that I really enjoy. I don’t think my FOMO is going away any time soon, but working to change my attitude has certainly helped!

**Lis Cohen**  
Founder  
weatheroutreach.org



Miss out on the first months of my newborn's life, or miss out on work experience and have a gap in my work history? Right before my daughter was born, I lost my job. The funding had just expired for the term-position which I held with the National Park Service. When I found out about losing my job, I was surprised and disappointed. I was also a bit worried, because we had just purchased a new home and our income was about to change. Although everything in my life was changing it made the question of working outside of the home easy. I did not have a job to go back to – it was quite liberating. Now that my toddler is almost two, I am again weighing the questions of how to best balance career and family life. The way I overcome that fear is to realize that everyone has his or her own path, and it is not a straight path (at least not for me). I remind myself of what the late Maya Angelou said, ‘Do the best you can until you know better. Then when you know better, do better.’

## Summary of General ESWN Discussion Forums



Sarah Anderson  
Ph.D. Candidate  
Washington State  
University

Dr. Alison Graettinger  
Postdoctoral Associate  
University at Buffalo



Stephanie Jarvis  
Geologist  
ERO Resources Corp.

The ESWN website (<http://eswnonline.org>) has a section called *Discussion Forums*, where members connect and discuss on all topics relevant to the interests of women in the Earth sciences. Here we have summarized some of the more popular discussions taking place over the last six months.

### Seeking advice for working at small liberal arts colleges

Back in late June, an ESWN member with a background working in large research institutions wrote to the community for advice regarding switching to a small liberal arts college (SLAC). Nearly every respondent mentioned the importance of loving to teach while also pointing out that each SLAC has unique requirements when it comes to research and tenure expectations.

Members also recommended the websites to read about the experiences of others at SLACs:

<http://smallpondscience.com/job-seeking>

<http://serc.carleton.edu/NAGTWorkshops/careerprep/jobsearch/profiles.html>

### Software for literature organization

With all the papers we have read, want to read, and will read, having a good plan for organization is critical. Members recently discussed their preferred software for literature organization, particularly those that you can use without an institutional license, free or inexpensive software, and cross-platform compatibility. Some of the recommendations included *Zotero*, *Mendeley*, *Qiqqa*, *Papers*, and *Paperpile*. The basic functionalities seem similar across most of the programs, but more advanced features relating to syncing and annotating PDFs vary by program. Member preferences tended towards *Zotero* and *Mendely*, but check the site for more details!

### Video conferencing software

Video conferencing software gets more usage by some individuals and institutions than others, but a few members discussed the pros and cons of popular programs for hosting online meetings. Issues such as group size, security, software stability, and cost were considered important factors in choosing host software. The consensus seemed to be that large group events require programs like *GoToMeeting/GoToWebinar*, *Webex*, and *Adobe Connect*. While these programs offer features like 'raise hand' and whiteboards, all of these require institutional accounts. *Skype* seemed preferable for private use or for small groups. *Google Hangouts* is a free option and is popular among science communication groups, but does require that all users have a Google account. *Appear.in* is also free and bypasses the need to download software or plug-ins, but it is limited to eight participants and is not compatible with all web browsers. For less formal online meetings, webcasting programs such as *Periscope* and *Meerkat* are good options.

### ResearchGate, AcademiaEdu, LinkedIn, Google Scholar...

How do you decide what online networks are worth your time? Most members replying to this discussion thread agreed that a *Google Scholar* profile is essential to getting your research out. *ResearchGate* was suggested to be useful for sharing publications; it also tracks and links new publications to your profile. However, some journals are not open-access or set an embargo period on publications, and should be consulted first before articles are shared. *LinkedIn* was valued for building and maintaining connections (even with people you meet quickly at conferences), can provide updates of your contacts, a quick-look at your CV, and is also good for networking outside of academia. *Twitter* was viewed to be a great public outreach tool for sharing your research with a broader audience. One great use of social media networks is self-promotion. Whatever profiles you do decide to have, be sure to maintain them.

*General Discussion Forum Summary (continued)***Feeling discouraged in university**

A member feeling discouraged at her university because of her grades and test scores reached out to the ESWN community in this thread for encouragement and support. Members were quick to offer up their own experiences at university dealing with a poor fit between the classroom and their personal goals, with learning disabilities, and struggling with difficult material that was reflected in poor grades. In general, the take-home messages were to stick with it, stay engaged, stay excited about science, and search out the resources and tools that can help, including everything from a supportive network of friends and advocates, to disability resources on campus.

**Discrimination – is it all in my head?**

Several discussions in the last six months addressed the discrimination or sexual harassment potentially experienced by women in science. These situations can be uncomfortable and difficult to deal with on one's own; however, discussing them with a trusted friend can produce a more empowering outcome. One discussion thread helped an ESWN member address the inappropriate comments made about her appearance from a senior male scientist. Members offered their support and understanding, and some suggested that instances of implicit bias, objectification, or micro-inequities (“the cumulative, repeated behaviors that devalue, discourage, and impair performance in the workplace,” [insighteducationsystems.com/index-5.html](http://insighteducationsystems.com/index-5.html)) can become teachable moments if they are addressed. Another discussion took place about the appalling situation of a student whose advisor stares down her shirt and the even more appalling [response by the “Ask Alice” science advice column to let him](#). Practical advice recommended by ESWN members included documenting and reporting the encounters and not giving up your individual power. One member reflected on the time she spoke out about an uncomfortable interaction with a more senior, male colleague to her female peers. The women learned that this experience was shared by the others, and they were empowered to address it professionally. Inappropriate behavior by individuals is often not a single, isolated event. Although women in science are often a minority, finding colleagues or others you trust to share your experiences with can help bring clarity to the isolated, or day-to-day experiences, as well as advice for moving forward.

ESWN members also discussed the sexual harassment perpetrated by the prominent astronomer Geoff Marcy, following the [breaking of the news, commentary](#) on the

events, the call for his [dismissal](#), and his eventual [resignation](#). The opinion that “sexual harassers are protected by the silence of their victims, inaction from authorities, and also apologists in their community,” underscores the importance of speaking out against discrimination, especially sexual harassment.

**#DistractinglySexy**

This lively ESWN discussion centered on the recent comments made by Nobel Laureate Tim Hunt as he discussed his personal issues with working in co-ed science laboratories and his encouragement of single-sex labs as a means to avoiding sexual distractions. These suggestions obviously carry heavy implications for gender parity in the sciences and were widely discussed through social media outlets. ESWN members considered the public responses to Hunt's initial comments, which have been both sympathetic and unsupportive. These include the popular Twitter topic ([#DistractinglySexy](#)) and the [Small Pond Science critique](#), both of which emphasize that the outrage against Hunt was fueled by his defiant response in standing behind his remarks that were strongly unsupportive of women in science. Members shared their personal experiences and discussed ways to move forward from this mentality. The discussion was wrapped up with some awesome videos that encourage alternative ways for viewing and representing women in the media and sexual harassment.

**Advice for preparing equipment and protocols**

The ESWN discussion forums also serve as a valuable hub for resources on starting new projects. For instance, after one member forgot her hard hat on her way out to the field, she decided that a safety protocol was in order and started the discussion thread *Field Work Safety* to get tips and ideas. Advice included using a 24/7 buddy system, ALWAYS having a personal survival pack (including survival blanket), 2-way radios or satellite phones, and using a distress signal. Addressing sexual harassment was also recommended, as was recently done by the Penn State Department of Anthropology. A similar discussion proceeded in the thread *Equipment for a hydrogeology and geochemistry course*. When a member was charged with the exciting, though daunting, opportunity to build an equipment inventory for her university's expanding geosciences program, she asked ESWN members to identify needs specifically for hydrology and geochemistry courses. Members came through with extensive lists and suggestions spanning hand-held field equipment, such as a flow meter with wading rod and Munsell soil books, to sophisticated analytical instruments, such as an ICP-OES or MS. Members also suggested that some of the more expensive lab equipment may be available in other

### General Discussion Forum Summary (continued)

departments such as the chemistry department. Excellent idea-sharing within the ESWN community!

### How many papers or proposals do you review?

In this thread, ESWN members shared their different rules of thumb for deciding how many papers and proposals to review over a given time. Approaches varied from reviewing only one at a time, an equal number as you submit, or matching the number of reviews required for each of your submissions (i.e., three times as many as submitted). A few journal editors chimed in expressing the difficulty in finding reviewers and the helpfulness of suggestions of potential reviewers when you do decline (multiple suggestions welcomed!). When deciding whether or not to review, various members pointed out that you can provide a useful review even if the field is outside your primary interests, and that time is frequently a more important factor. Travelling soon? Conflict of interest? Keeping in mind your future schedule will help make wise commitments.

### Conference code of conduct

Not all professional meetings have established codes of conduct. While such a code may be desirable, developing one can be a big task. This discussion was started by an ESWN member looking for examples and feedback on the codes of conduct for professional meetings. Members shared the codes from various disciplinary conferences (AGU, ESA, AMS), as well as the [template based on the JavaScript Conferences](#), which is available for use and adaptation. Members ultimately agreed that these frameworks benefit meeting participants and provide a mechanism for dealing with complaints. The biggest challenge for an organizing group is to determine not only the content of the code but also the target for having one in the first place.

### Co-authorship? Credit for peer reviews?

When working on manuscripts, the subject of when to credit colleagues can be a big grey area. This topic has been widely discussed on the ESWN Discussion Forums as members consider how to assess intellectual contributions from co-authors versus recognizing helpers in the acknowledgements section of a manuscript. [The GSA guidelines for authorship](#) (Section 3.8.1), requiring “significant contributions to the concept, design, execution or interpretation of the work reported in a manuscript,” were provided as a reference.

In a related thread, members discussed the potential of a

new website (<https://publons.com/>) that claims to give credit for peer-reviewing articles. The American Physical Society was noted for having started a similar process to recognize reviewers that compares reviewers in their respective fields. Including reviewing statistics in your annual report and listing journals that you review for on your CV are common ways to “count” the effort that goes into reviewing. One member recently received a personal thank you note from the author of a paper she had reviewed, which to her was worth more than any metric. ●●●

Photo: Patricia Oikawa, Ph.D.,  
Postdoctoral Fellow, University of California, Berkeley



### R vs. Python for the Earth Sciences



Dr. Karen R. Ryberg  
Statistician  
US Geological Survey,  
North Dakota Water  
Science Center

Programming skills are important in any field and can increase one’s efficiency and data analysis capabilities. However, how do you go about selecting a programming language to learn new, or to improve upon your skills? A recent discussion on [eswnonline.org](http://eswnonline.org) questioned the benefits of learning the computer programming languages R and/or Python. Both are popular for a variety of science tasks and have large fan bases. The best one for you has a lot

*R vs. Python for the Earth Sciences (continued)*

to do with your expertise in other analysis tools and your particular field of research, as well as legacy analysis tools your department or company may use.

R, an open source software for statistical computing and graphics, first became available in the mid-1990s and aims to be the “lingua franca of statistics.” R has an enormous list of statistical functions (in the base R package and in add-on packages) that can be utilized without one having to program unique functions. One of R’s strengths is its ability to create a limitless variety of publication-quality plots that can include mathematical symbols and formulae. R also has many packages available for data access, cleaning, and reporting tasks. If you generate more reports and plots than maps and sometimes incorporate mathematical symbols or formulae, R might be the better choice.

Python is an open source general-purpose language, developed in the late 1980s. It is widely used in many fields and has an emphasis on maintainable, production code. Python was incorporated into ArcGIS (a commercial geographic information systems software) in version 9.0 and can be used for spatial analysis, data conversion, and map automation. The open source GIS programs QGIS and GRASS also have scripting support for Python. So, if you come from a geographic information systems, geography, or spatial analysis background and intend to use GIS software, there is likely a higher payoff for learning Python. Python of course can be used outside of GIS programs and includes statistical routines, while R can import spatial data, perform spatial analysis, and generate maps.

DataCamp, an online learning platform for data scientists, created an infographic comparing R and Python for data analysis (<http://blog.datacamp.com/r-or-python-for-data-analysis/>). DataCamp says that “the closer you are to working in an engineering environment, the more you might prefer Python,” while “the closer you are to statistics, research and data science, the more you might prefer R.” The infographic indicates that Python is more popular than R, but people with R skills have a higher average salary.

Python is generally considered easier to learn and read – it is sometimes called executable pseudocode (pseudocode normally being a high-level, human readable description of an algorithm). readable description of an algorithm). Once the languages are learned though, DataCamp indicates that exploratory work is easier in R, while production use is better

implemented in Python (web apps and production databases for example).

Both have large user and developer bases that contribute to help forums and code repositories. There are numerous help forums, but a good place to start is Stack Overflow (<http://stackoverflow.com/>), an online community for programmers. Questions are tagged with the programming language (including the tags “r” and “python”) to help one sort through the existing questions and answers. Developers contribute add-on packages to the Comprehensive R Archive Network (CRAN, [mirror.las.iastate.edu/CRAN/](http://mirror.las.iastate.edu/CRAN/)) and the Python Package Index (PyPI, [pypi.python.org/pypi](http://pypi.python.org/pypi)).

CRAN provides [task views](#) where one can look for their field, such as environmetrics or computational physics, and see what packages have been contributed. PyPI allows users to [browse packages](#) by successively selecting categories. Packages are also available on GitHub (<https://github.com/explore>), a repository for many programming languages and productivity tools. GitHub has a social aspect that allows one to follow repositories of interest and collaborate on programming projects.

Still not sure which direction to go? Check if major conferences in your field offer sessions related to either programming language. For example, the American Meteorological Society has sponsored symposiums on modeling and analysis in Python (and atmospheric science is the earth science discipline with the most scientific/engineering packages in PyPI). Finally, you could always learn both! The rPython package allows one to run Python code from R and the RPy2 library allows one to run R code from Python. Best of luck for exploring your programming needs!

Acknowledgements: Thank you to ESWN member Samaneh Hejazi, GIS and Data Analyst, County of Riverside, California, and Cheryl Buchwald, Hydrologist, U.S. Geological Survey for providing feedback on this article. ●●●



Photo: Dr. Christine Wiedinmyer  
Scientist III, NCAR

## ESWN Reaches out to Undergraduates



Dr. Emily Fischer  
Assistant Professor  
Colorado State University



PROGRESS Front Range Workshop

The NSF IUSE (Improving Undergraduate STEM Education) grant focused on recruiting and retaining women in the geosciences was recently awarded to ESWN Board Members Emily Fischer, Manda Adams, and Becca Barnes, and ESWN member Sandra Clinton. They hosted the first PROGRESS (Promoting Geoscience Education Research and Success) workshops this fall in Colorado and South Carolina.

More than 50 students from the University of Colorado, Colorado State University, Colorado College, and University of Wyoming attended the workshop held in Estes Park on October 10<sup>th</sup> and 11<sup>th</sup>. Through a range of activities at the workshop, students were introduced to the geoscience fields, they met peers with similar interests across the Front Range, and they learned about their personal strengths.

A second workshop was held in the Carolinas on October 24<sup>th</sup> and 25<sup>th</sup> at Camp Canaan in Rock Hill, SC. Students from the University of South Carolina, the University of North Carolina Charlotte, and North Carolina State University attended.



PROGRESS Carolinas Workshop

Next, students will take part in an informal mentoring program with scientists across their region. You can learn more about the program by visiting the new web portal: <http://geosciencewomen.org/>. Thanks so much to all of our fantastic ESWN volunteers who served as panelists at the workshop and are continuing to serve as mentors for the students. Based on our first survey of the undergraduates participating in the program, we think they like it! Here is a wordcloud of their description of the workshop.



## Updates from ESWN Members



**Dr. Karen R. Ryberg**  
Statistician  
US Geological Survey,  
North Dakota Water  
Science Center

**Róisín Commene**, published the paper "Seasonal fluxes of carbonyl sulfide in a mid-latitude forest" in the *Proceedings of the National Academy of Sciences* (PNAS). Along with Dona Zona, University of Sheffield/San Diego State University as lead author, she also had the paper "Cold season emissions dominate the Arctic tundra methane budget" accepted in *PNAS*. She gave an invited talk on arctic carbon fluxes in the Earth, Atmospheric and Planetary Sciences (EAPS) department at MIT, Cambridge, Massachusetts, in November.

**Kyla Dahlin** began an assistant professor position this year in the Geography department of Michigan State University. The main results of her postdoctoral fellowship at the National Center for Atmospheric Research were published in *Biogeosciences* over the summer, titled "Environmental drivers of drought deciduous phenology in the Community Land Model." She and her family are adjusting to life in the upper Midwest, but also looking forward to lots of travel in 2016.

**Andrea Dutton** was lead author of a review paper on sea-level rise during past warm periods that was published in *Science* this summer. The results were reported by more than 30 media outlets worldwide, including the Washington Post, The Guardian, and Reuters. Following this media attention, US Senator Bill Nelson (D-FL) visited Dutton on campus to discuss the findings of her research in greater depth. In the past few months, Dutton was awarded the Excellence in Research Award for Assistant Professors awarded by the provost at the University of Florida (UF); she was elected as a Fellow of the Florida Climate Institute for excellence in interdisciplinary climate studies; and she was awarded to the first cohort of the Global Fellows program by the UF International Center to initiate an international research project. Dutton's research program was recently featured in *Science* magazine in an article by Warren Cornwall entitled "Ghosts of Oceans Past."

**Summer J. Ohlendorf** began a new job as a scientist at the National Tsunami Warning Center (NTWC) in Palmer, Alaska. The NTWC is responsible for rapidly assessing seismic and oceanographic data to provide reliable tsunami detection, forecasts, and warnings to the coasts of the United States and Canada.

**Carmen Rodriguez** defended her Ph.D. in Marine Chemistry from the University of Miami this November. Her dissertation examined the physical chemistry of seawater and other relevant electrolytes in natural waters. Early next year, she will act as co-chief scientist on an international GO-SHIP (Global Ocean Ship-Based Hydrographic Investigations Program) research cruise, sailing from Australia to Thailand.

**Dr. Lori Sutter**  
Warnell School of  
Forestry and Natural  
Resources  
University of Georgia



**Caroline Beghein** was awarded a National Science Foundation (NSF) grant to further study global mantle seismic anisotropy. Together with her graduate student, Zheng Xing, Beghein published a paper in *Geophysical Journal International* on the importance of crustal corrections in global seismic anisotropy from surface wave tomography. She welcomed two new graduate students in her group, was selected to be one of the 2016 IRIS/SSA (Incorporated Research Institutions for Seismology and the Seismological Society of America) Distinguished Lecturers, and was promoted to associate professor with tenure. On a more personal note, she also had a new baby girl, Marguerite, born in May 2015.

**Lindsay Brin**, along with Anne Giblin and Jeremy Rich, published the article "Effects of experimental warming and carbon addition on nitrate reduction and respiration in coastal sediments," in *Biogeochemistry* in June. This study demonstrated that warming and organic carbon addition could switch sediments from net nitrogen sinks to sources due to an unexpected increase in dissimilatory nitrate reduction to ammonium (DNRA), implicating changes in carbon availability as a mechanism through which climate change may alter coastal nitrogen cycling.

*Member Updates (continued)*

**Karen R. Ryberg**, along with three colleagues, published the paper “Changes in seasonality and timing of peak streamflow in snow and semi-arid climates of the north central United States, 1910–2012,” in the journal *Hydrologic Processes*. Ryberg also gave an invited talk on this and related research at a workshop titled “Climate Change Scenario Planning for Resource Management and Operations in Central North Dakota.”

**Robina Shaheen**, a member of the AWIS-SD (Association for Women in Science-San Diego chapter), organized the WIST2015 Conference (the 13<sup>th</sup> Women in Science and Technology Conference, <https://wist2015.wordpress.com/>). Responsibilities included formation of seven subcommittees and working with them every 2nd and 4th weekend of the month for an entire year.

**Raquel A. Silva** is graduating in December with a Ph.D. in Environmental Sciences and Engineering from The University of North Carolina at Chapel Hill. She recently defended her dissertation, “Climate change, air quality and human health: quantifying the global mortality impacts of present and future ozone and PM2.5 ambient air pollution.” Silva is currently working for the North Carolina Department of Health and Human Services in climate and health vulnerability mapping.

**Lori A. Sutter** moved to the University of Georgia where she has formed a research collaboration with biogeochemist Daniel Markewitz in the Warnell School of Forestry & Natural Resources. Sutter, along

with two colleagues, published the paper “Hydraulic Fracturing: Potential Impacts to Wetlands” in *Wetland Science & Practice*. Soon to be released with two other colleagues is “Science and Policy of U.S. Wetlands” in the *Tulane Environmental Law Journal*. Sutter presented a talk at the Coastal & Estuarine Research Federation meeting in Portland, Oregon entitled “Tidal marsh vegetation response to sea-level rise in the Delaware Bay Estuary.”



ESWN board members Meredith Hastings (left) and Tracey Holloway (right) at Brown University graduation procession in May 2015. Meredith is a professor at Brown - here in academic regalia! Tracey is a Brown alum, marching as part of her 20th college reunion.

**Thank you for supporting ESWN and making it what it is! Special thanks go out to the ESWN Newsletter Committee with graphic designing by Rachel Licker, and a big thanks to our generous sponsors!!**

